ELSEVIER

Volumes 308–309, 31 October 1997

thin solid films

Contents

Preface v

Publication schedule vii

Committees xv

Exhibitors xviii

Recent advances in optical coating materials

Electrical, optical and structural characteristics of indium-tin-oxide thin films deposited on glass and polymer substrates . . . 1
A.K. Kulkarni, K.H. Schulz, T.-S. Lim, M. Khan (Houghton, MI, USA)

Optical scattering enhanced by silicon micromachined surfaces 8
E.S. Kolesar (Fort Worth, TX, USA), V.M. Bright, D.M. Sowders (Dayton, OH, USA)

Preparation of transparent conducting $In_4Sn_3O_{12}$ thin films by DC magnetron sputtering 13
T. Minami, Y. Takeda, S. Takata, T. Kakumu (Ishikawa, Japan)

PML/oxide/PML barrier layer performance differences arising from use of UV or electron beam polymerization of the PML layers 19
J.D. Affinito, S. Eufinger, M.E. Gross, G.L. Graff, P.M. Martin (Richland, WA, USA)

The use of experimental design techniques to meet reflected color targets in pyrolytic low emissivity coatings 26
G.A. Neuman, R.L. Stewart-Davis (Harmarville, PA, USA)

Optical methods for process monitoring and control

Sensitivity of variable angle spectroscopic ellipsometry to isotropic thin film properties 31
F.K. Urban III, D. Barton (Miami, FL, USA)

Investigations on the structure of boron nitride films 38
W. Fukarek, O. Kruse, A. Kolitsch, W. Möller (Dresden, Germany)

Ellipsometric studies of thermally induced transformation phenomena in oxide films 42
A. Rose, G.J. Exarhos (Richland, WA, USA)

Structure/property relationships in dielectric films

Analysis of binary electrochromic tungsten oxides with effective medium theory 50
K. von Rottkay, N. Ozer, M. Rubin, T. Richardson (Berkeley, CA, USA)

Spectroscopic characterization of processing-induced property changes in doped ZnO films 56
G.J. Exarhos, A. Rose, C.F. Windisch Jr (Richland, WA, USA)

Plasma enhanced chemical vapour deposition of silica thin films in an integrated distributed electron cyclotron resonance reactor 63
P. Bulkin, N. Bertrand, B. Drévillon (Cédex, France), J.C. Rostaing (Jouy-en-Josas, France), F. Delmotte, M.C. Hugon, B. Agius (Orsay, France)

Post-deposition processing of low temperature PECVD silicon dioxide films for enhanced stress stability 68
M.S. Haque, H.A. Naseem, W.D. Brown (Fayetteville, AR, USA)

Morphology of dual beam ion sputtered films investigated by atomic force microscopy 74
C.-C. Lee, J.-C. Hsu, D.T. Wei, J.-H. Lin (Taiwan, China)

Electronic properties and impurity levels in filtered cathodic vacuum arc (FCVA) amorphous silicon 79
M.M.M. Bilek, W.I. Milne (Cambridge, UK) . . . . .

Symposium C poster session

Fabrication and characterization of spherical polycrystalline diamond emitter arrays 85
C.-F. Chen, W.-H. Huang (Hsinchu, Taiwan)

Elsevier Science S.A.

Photoresist characteristics of polyurea films prepared by vapor deposition polymerization 90
M. Sato, M. Iijima, Y. Takahashi (Ibaraki, Japan)

Synthesis, characterization, and applications of cubic boron nitride and CN materials

Formation of cubic boron nitride by the reactive sputter deposition of boron. 94
A.F. Jankowski, J.P. Hayes, D.M. Makowiecki, M.A. McKernan (Livermore, CA, USA)

A novel approach to deposition of cubic boron nitride coatings. 101
I. Konyashin, J. Loeffler, J. Bill, F. Aldinger (Stuttgart, Germany)

Vibrational spectroscopy of mixed hexagonal-cubic boron nitride thin films 107
M.G. Beghi, C.E. Bottani (Milano, Italy), A. Miotello (Povo, Italy), P.M. Ossi (Milano, Italy)

Superhard coatings of CN_x/ZrN multilayers prepared by DC magnetron sputtering 113
M.-L. Wu, W.-D. Qian, Y.-W. Chung (Santa Barbara, CA, USA), Y.-Y. Wang, M.-S. Wong, W.D. Sproul (Evanston, IL, USA)

Low-energy ion bombardment effects in reactive rf magnetron sputtering of carbon nitride films 118
R. Kaltofen, T. Sebald, G. Weise (Dresden, Germany)

Preparation of a novel target material for carbon nitride film deposition 126
T.-R. Lu, C.-T. Kuo, T.-M. Chen (Hsinchu, Taiwan)

The composition and bonding structure of CN_x films and their influence on the mechanical properties 130
A.K.M.S. Chowdhury, M. Monclus, D.C. Cameron, J. Gilvarry, M.J. Murphy (Dublin, Ireland), N.P. Barradas (Surrey, UK), M.S.J. Hashmi (Dublin, Ireland)

Optical and mechanical properties of amorphous CN films. 135
S. Lee, S.J. Park, S.-g. Oh (Suwon, South Korea), W.M. Kim, J. Hwan Bae, B.-k. Cheong, S. Gwang Kim (Seoul, South Korea)

Synthesis and characterization of diamond and related materials

High pressure high power microwave plasma chemical vapor deposition of large area diamond films 141
H.A. Naseem, M.S. Haque, M.A. Khan, A.P. Malshe, W.D. Brown (Fayetteville, AR, USA)

About the growth of diamond crystals obtained by the combustion-flame method: use for coatings on large area substrates . 147
T. Le Huu, H. Zaidi, D. Paulmier (Vandoeuvre-Les-Nancy, France)

Optical emission spectroscopy of the plasma during microwave CVD of diamond thin films with nitrogen addition and relation to the thin film morphology 154
T. Vandevelde, M. Nesladek, C. Quaeyhaegens, L. Stals (Diepenbeek, Belgium)

Growth of flake-like diamond crystal using polymer precursor 159
Z. Sun, X. Shi, B.K. Tay, X. Wang (Singapore, Singapore), Y. Sun (North Dartmouth, MA, USA)

An improved method for large-area oriented nucleation of diamond during bias process via hot-filament chemical vapor deposition 163
X. Li, Y. Hayashi, S. Nishino (Kyoto, Japan)

Analysis of intrinsic stress distribution in grains of high quality CVD diamond film by micro-Raman spectroscopy 168
I.I. Vlasov, V.G. Ralchenko, E.D. Obraztsova, A.A. Smolin, V.I. Konov (Moscow, Russia)

Electrical properties of diamond-like nanocomposite coatings 173
C. Venkatraman, A. Goel, R. Lei, D. Kester, C. Outten (Buffalo, New York, USA)

Study for fabricating large area diamond single-crystal layers 178
C. Findeling-Dufour, A. Gicquel (Villetaneuse, France)

Heat treatment of cathodic arc deposited amorphous hard carbon films 186
S. Anders, J.W. Ager III (Berkeley, CA, USA), G.M. Pharr (Houston, TX, USA), T.Y. Tsui (Sunnyvale, CA, USA), I.G. Brown (Berkeley, CA, USA)

Surface analysis and bioreactions of F and Si containing a-C:H. 191
R. Hauert, U. Müller, G. Francz (Dübendorf, Switzerland), F. Birchler, A. Schroeder, J. Mayer, E. Wintermantel (Schlieren, Switzerland)

Surface relaxation during plasma chemical vapor deposition of diamond-like carbon films, investigated by in-situ ellipsometry 195
A. von Keudell, T. Schwarz-Selinger, W. Jacob (Garching, Germany)

Growth conditions and properties of tetrahedral amorphous carbon films 199
B.K. Tay, X. Shi, L.K. Cheah, D.I. Flynn (Singapore, Singapore)

Electronic and optical applications of diamond and related materials

Field emission from cleaved diamond fibers 204
J.W. Glesener, H.B. Lin, A.A. Morrish (Washington, DC, USA)

Evaluation of buffer layers for hot filament chemical vapor deposition diamond films on silicon substrates 209
A. Kumar, Q. You, J.S. Kapat, A. Mangiaracina (Mobile, AL, USA), A. Catletge, Y. Vohra (Birmingham, AL, USA)

Metallization of CVD diamond films by cathodic arc deposition 215
O.R. Monteiro (Berkeley, CA, USA), M.C. Salvadori, M. Cattani, V. Mammaana (Sao Paulo, SP, Brazil), I.G. Brown (Berkeley, CA, USA)

Symposium D poster session

Low temperature plasma enhanced chemical vapour deposition boron nitride 219
M.N.P. Carreño, J.P. Bottecchia, I. Pereyra (São Paulo, Brazil)

Reactive magnetron sputtering of CN_x thin films at different substrate bias. 223
W.T. Zheng, E. Broitman, N. Hellgren, K.Z. Xing, I. Ivanov, H. Sjöström, L. Hultman, J.-E. Sundgren (Linköping, Sweden)

Production and characterisation of carbon nitride thin films produced by a graphite hollow cathode system 228
S. Muhl, A. Gaona-Couto, J.M. Méndez, S. Rodil, G. Gonzalez, A. Merkulov, R. Asomoza (México, D.F., Mexico)

Deposition of carbon nitride films by vacuum ion diode with explosive emission 233
S.A. Korenev (Newark, NJ, USA, Dubna, Moscow Region, Russia), A.J. Perry (San Diego, CA, USA), A. Elkind (Ann Arbor, MI, USA), A. Kalmukov (Dubna, Moscow Region, Russia)

Preparation of carbon nitride thin films by ion beam assisted deposition and their mechanical properties 239
M. Kohzaki, A. Matsumuro, T. Hayashi, M. Muramatsu, K. Yamaguchi (Aichi, Japan)

Improving thickness uniformity of freestanding diamond sheets synthesized by the combustion flame method 245
M. Murakawa, M. Suzuki, S. Takeuchi (Saitama, Japan)

Measurement of internal stresses in CVD diamond films 249
Y. Nakamura, S. Sakagami, Y. Amamoto, Y. Watanabe (Kanagawa, Japan)

Studies on CVD-diamond on Ti6Al4V alloy surface using hot filament assisted technique 254
T.M. de Souza (São José dos Campos, Lorena, SP, Brazil), N.F. Leite, V.J. Trava-Airoldi, E.J. Corat (São José dos Campos, SP, Brazil)

Study of porosity in permeable diamond membranes 258
V.P. Mammana, M.C. Salvadori, I.G. Brown (São Paulo, SP, Brazil) (Berkeley, CA, USA)

Structural dependence of mechanical properties of Si incorporated diamond-like carbon films deposited by RF plasma-assisted chemical vapour deposition. 263
K.-R. Lee, M.-G. Kim, S.-J. Cho, K.Y. Eun (Seoul, South Korea), T.-Y. Seong (Kwangju, South Korea)

Optical properties of tetrahedral amorphous carbon films determined by spectroscopic ellipsometry. 268
B.K. Tay, X. Shi, L.K. Cheah, D.I. Flynn (Singapore, Singapore)

Application of heat treatment and dispersive strengthening concept in interlayer deposition to enhance diamond film adherence 273
C.R. Lin (Taipei, Taiwan), C.T. Kuo, R. Ming Chang (Hsinchu, Taiwan)

Investigation of distribution of defects and impurities in boron-doped CVD diamond film by cathodoluminescence spectroscopy 279
C. Wang, A. Hatta, N. Jiang, J. Won, T. Ito, A. Hiraki (Suita, Japan), Z. Jin, G. Zou (Changchun, People's Republic of China)

Optical characterization of nitrogenated carbon overcoats 284
R. Wen-Jui Chia, E. Li (Santa Clara, CA, USA), S. Sugi (Tokyo, Japan), G.G. Li, H. Zhu, A.R. Forouhi, I. Bloomer (Santa Clara, CA, USA)

Micro- and nanoscale mechanical testing, modeling and analysis

Between nanoindentation and scanning force microscopy: measuring mechanical properties in the nanometer regime 289
S.P. Baker (Stuttgart, Germany)

Novel nanoindentation method for characterising multiphase materials 297
N.X. Randall, C. Julia-Schmutz (Neuchâtel, Switzerland), J.M. Soro, J. von Stebut (Nancy, France), G. Zacharie (Morêt-sur-Loing, France)

Investigation of the elastic modulus of thin films using simple biaxial bending techniques 304
A.K. Jämting, J.M. Bell (Brisbane, Australia), M.V. Swain (Lindfield, Australia), N. Schwarzer (Chemnitz-Zwickau, Germany) . . . . .

Mechanical properties and film adhesion

A practical method for the determination of the Young's modulus and residual stresses of PVD thin films 310
M.D. Tran, J. Poublan, J.H. Dautzenberg (Eindhoven, The Netherlands)

Determination of the fatigue properties of multilayer PVD coatings on various substrates, based on the impact test and its FEM simulation 315
K.-D. Bouzakis, N. Vidakis (Thessaloniki, Greece), T. Leyendecker, G. Erkens, R. Wenke (Aachen, Germany)

Bending stiffness measurements of magnetic tapes and substrates 323
W.W. Scott, B. Bhushan (Columbus, OH, USA)

A comparative assessment of three approaches for ranking the adhesion of TiN coatings onto two steels 329
A. Kuper, R. Clissold, P.J. Martin, M.V. Swain (NSW, Australia)

Characterisation of TiN thin films using the bulge test and the nanoindentation technique. 334
A. Karimi, O.R. Shojaei, T. Kruml, J.L. Martin (Lausanne, Switzerland)

Nanotribology of ultrathin a:SiC/SiC-N overcoats using a depth sensing nanoindentation multiple sliding technique. 340
T.W. Scharf, J.A. Barnard (Tuscaloosa, AL, USA)

Influence of surface integrity on performance of coated cutting tools 345
H.K. Tönshoff, C. Blawit (Hannover, Germany)

A Mössbauer spectroscopy study of Ti–Fe interfaces produced by the PVD process 351
J.S. Brooks, J.L. Davidson, S.D. Forder, W.-D. Münz (Sheffield, UK), M. Larsson (Uppsala, Sweden)

Surface and thin-film analysis

Materials characterization of $Si_{1-x-y}Ge_xC_y/Si$ superlattice structures 358
T. Laursen, D. Chandrasekhar, D.J. Smith, J.W. Mayer (Tempe, AZ, USA), E.T. Croke, A.T. Hunter (Malibu, CA, USA)

Crystallization and residual stress formation of sol-gel-derived zirconia films 363
A. Mehner, H. Klümper-Westkamp, F. Hoffmann, P. Mayr (Bremen, Germany)

Applications of focused ion beam machining to the characterization of carbide, nitride and oxide films 369
N. Presser, M.R. Hilton (El Segundo, CA, USA)

Auger depth profiles and stud pull adhesion of metal films on graphite–epoxy composites 375
P. Kraatz (Redondo Beach, CA, USA), T.H. Lee (Long Beach, CA, USA), L. Weil (Rancho Palos Verdes, CA, USA)

Elemental depth profiling of coated and surface-modified materials by GD-OES: hard coatings on cutting tools 382
Z. Weiss, K. Marshall (St. Joseph, MI, USA)

Microstructural characterization and imaging

TEM specimen preparation and characterization of ceramic coatings on fiber tows 389
R.S. Hay, J.R. Welch, M.K. Cinibulk (Ohio, OH, USA)

Modification of a disordered Ni_3Fe alloy surface by 50 keV Zr ion implantation 393
Y.P. Sharkeev (Tomsk, Russia), A.J. Perry (San Diego, CA, USA), D.E. Geist (Denver, CO, USA), A.I. Ryabchikov, A.S. Tailashev, N.V. Girsova, E.V. Kozlov (Tomsk, Russia)

The small angle cleavage technique applied to coatings and thin films 399
S.D. Walck (Wright Patterson AFB, OH, USA), J.P. McCaffrey (Ontario, Canada)

Structural characterization of pulsed laser-deposited AlN thin films on semiconductor substrates 406
A. Kumar, H.L. Chan (Mobile, AL, USA), J.J. Weimer, L. Sanderson (Huntsville, AL, USA)

Symposium F poster session

A comparative study of refractory metal nitridation in an NH_3 ambient 410
Y.L. Zou, T.L. Alford, Y. Zeng, T. Laursen, B.M. Ullrich (Tempe, AZ, USA)

A study of ion-bombarded nanostructures on germanium surfaces by scanning probe microscopy 415
Y.J. Chen, W.Y. Cheung, I.H. Wilson, S.P. Wong, J.B. Xu (Shatin, N.T., Hong Kong)

Structural inhomogeneities in thin epitaxial films of $YBa_2Cu_3O_{7-\delta}$ and their effects on superconducting properties 420
S.B. Qadri, E.F. Skelton, P.R. Broussard, V.C. Cestone, M.S. Osofsky, V.M. Browning, M.E. Reeves (Washington, DC, USA), W. Prusseit (Garching, Germany)

Glow discharge optical spectroscopy depth profiles of ion implanted steel, titanium and titanium nitride coatings 425
F. Seidel, H.-R. Stock, P. Mayr (Bremen, Germany)

Influence of electroless Ni-P deposits on the corrosion-fatigue properties of an AISI 1045 steel 430
J. Chitty, A. Pertuz (Caracas, Venezuela), H. Hintermann (Neuchâtel, Switzerland), M.H. Staia, E.S. Puchi (Caracas, Venezuela)

Thermal fatigue of hot work tool steel with hard coatings 436
C.M.D. Starling, J.R.T. Branco (Minas Gerais, Brazil) . . . . .

Advanced metallization materials and processes

Electromigration in 0.25 μm wide Cu line on W 443
C-K. Hu, K.Y. Lee, L. Gignac, R. Carruthers (Yorktown Heights, NY, USA)

Titanium-nitride self-encapsulation of Cu and Ag films on silicon dioxide 448
D. Adams (Bellville, South Africa), T. Laursen, T.L. Alford, J.W. Mayer (Tempe, AZ, USA)

Metallization of sub-micron trenches and vias with high aspect ratio 455
P. Siemroth, Ch. Wenzel, W. Klimes, B. Schultrich, T. Schülke (Dresden, Germany)

Characterization of Al-1 wt% Y thin films for VLSI interconnects 460
Y. Liu, K.F. Poole, R. Singh, J. Harriss, R.J. Diefendorf (Clemson, SC, USA)

Microstructures of copper thin films prepared by chemical vapor deposition 465
N.-I. Cho, D.I. Park (Chungnam, South Korea) . . . . .

Advanced dielectrics: materials and processes

Copper diffusion in organic polymer resists and inter-level dielectrics 470
D.J. Godbey, L.J. Buckley, A.P. Purdy, A.W. Snow (Washington, DC, USA)

Heat resistant polyimide films with low dielectric constant by vapor deposition polymerization 475
S. Ukishima, M. Iijima, M. Sato, Y. Takahashi, E. Fukada (Ibaraki, Japan)

Fundamental insight on developing low dielectric constant polyimides 480
J.O. Simpson, A.K. St.Clair (Hampton, VA, USA)

The dissolution of copper in common solvents used for low dielectric polymers 486
A.P. Purdy, D. Godbey, L. Buckley (Washington, DC, USA)

Application of SiO_2 aerogel film with low dielectric constant to intermetal dielectrics 490
M.-H. Jo, J.-K. Hong, H.-H. Park, J.-J. Kim, S.-H. Hyun, S.-Y. Choi (Seoul, South Korea)

Preparation and characterization of porous silica xerogel film for low dielectric application 495
J.-K. Hong, H.-S. Yang, M.-H. Jo, H.-H. Park, S.-Y. Choi (Seoul, South Korea)

Stabilizing dielectric constant of fluorine-doped SiO_2 film by N_2O and NH_3 plasma post-treatment 501
Y.J. Mei, T.C. Chang, S.J. Chang, F.M. Pan, M.S.K. Chen, A. Tuan, S. Chou, C.Y. Chang (Hsin-Chu, Taiwan)

Deposition of stable, low κ and high deposition rate SiF_4-doped TEOS fluorinated silicon dioxide (SiOF) films 507
M.K. Bhan, J. Huang, D. Cheung (Santa Clara, CA, USA) . . . . .

Chemical mechanical polishing

Cartesian coordinate maps for chemical mechanical planarization uniformity characterization 512
T.F.A. Bibby, R. Harwood, D. Schey (Phoenix, AZ, USA), K. McKinley (Bethel, CT, USA)

Effects of corrosion environments on the surface finishing of copper chemical mechanical polishing 518
M.T. Wang, M.S. Tsai, C. Liu, W.T. Tseng, T.C. Chang, L.J. Chen, M.C. Chen (Hsinchu, Taiwan)

Damascene copper interconnects with polymer ILDs 523
D.T. Price, R.J. Gutmann, S.P. Murarka (Troy, NY, USA)

Surface interaction forces in chemical-mechanical planarization 529
K. Rajan (Troy, NY, USA), R. Singh, J. Adler, U. Mahajan, Y. Rabinovich, B.M. Moudgil (Gainsville, FL, USA)

Stress distribution in chemical mechanical polishing 533
C. Srinivasa-Murthy, D. Wang, S.P. Beaudoin (Tempe, AZ, USA), T. Bibby, K. Holland (Phoenix, AZ, USA), T.S. Cale (Tempe, AZ, USA)

CMP CoO reduction: slurry reprocessing 538
T.F.A. Bibby, J.A. Adams, K. Holland, G.A. Krulik, P. Parikh (Phoenix, AZ, USA)

Effects of underlying films on the chemical-mechanical polishing for shallow trench isolation technology 543
Y.-L. Wang, C. Liu, M.-S. Feng (Chiao-Tung, Taiwan), J. Dun, K.-S. Chou (Hsin-chu, Taiwan)

Chemical-mechanical polishing of low-dielectric-constant spin-on-glasses: film chemistries, slurry formulation and polish selectivity 550
Y.-L. Wang, C. Liu, S.-T. Chang, M.-S. Tsai, M.-S. Feng, W.-T Tseng (Hsinchu, Taiwan)

Chemical-mechanical polishing as an enabling technology for giant magnetoresistance devices 555
Y.Z. Hu, R.J. Gutmann, T.P. Chow (Troy, NY, USA), K. Bussmann, S.F. Cheng, G.A. Prinz (Washington, DC, USA)

Silicides

Dose-rate effects on the formation of ultra-shallow junctions with low-energy B^+ and BF_2^+ ion implants 562
D.F. Downey (Gloucester, MA, USA), C.M. Osburn (Raleigh, NC, USA), J.J. Cummings, S. Daryanani, S.W. Falk (Gloucester, MA, USA)

Reaction of amorphous Si with cobalt silicide before disilicide formation for reducing Si consumption in SIMOX 570
J.-S. Maa, S.T. Hsu, B. Ulrich, C.-H. Peng (Camas, WA, USA)

Edge leakage of cobalt silicided shallow junctions. 575
C.-H. Peng, J.-s. Maa, S.T. Hsu (Camas, WA, USA)

Synchrotron radiation characterization of metal silicide thin films: some observations 580
S.J. Naftel, I. Coulthard, T.K. Sham (London, Canada), D.-X. Xu, L. Erickson, S.R. Das (Ottawa, Canada)

The effects of screen oxide and low temperature BPSG anneal on titanium salicide formation 585
K.-N. Lee, J.-G. Ahn, H. Hwang, J.S. Byun, Y.-J. Lee (Cheongju, South Korea) . . . . . .

Silicon contact technology

Electrical properties of Ti/TiN films prepared by chemical vapor deposition and their applications in submicron structures as contact and barrier materials 589
J. Hu, M. Ameen, G. Leusink, D. Webb, J.T. Hillman (Gilbert, AZ, USA)

Characterization of TiN film grown by low-pressure-chemical-vapor-deposition 594
Y.J. Mei, T.C. Chang, J.C. Hu, L.J. Chen, Y.L. Yang, F.M. Pan, W.F. Wu, A. Ting, C.Y. Chang (Hsin-Chu, Taiwan)

Nonsilicon contact technology

A survey of ohmic contacts to III-V compound semiconductors 599
A.G. Baca (Albuquerque, NM, USA), F. Ren (Murray Hill, NJ, USA), J.C. Zolper, R.D. Briggs (Albuquerque, NM, USA), S.J. Pearton (Gainsville, FL, USA)

Thermal stability of the non-alloyed Pd/Sn and Pd/Ge Ohmic contacts to *n*-GaAs 607
M.S. Islam, P.J. McNally, D.C. Cameron (Dublin, Ireland)

Electrical and mechanical properties of MgO thin films on GaAs 611
R. Soto, S. Mergui, P.E. Schmidt (Miami, FL, USA) . . . . . .

Symposium H poster session

Some effects of temperature ramping on metal organic chemical vapor deposited Al film nucleation 615
D. Yang, R. Jonnalagadda, V. Mahadev, T.S. Cale (Tempe, AZ, USA), J.T. Hillman, R.F. Foster (Gilbert, AZ, USA), B.R. Rogers (Mesa, AZ, USA)

Improved ozone-tetraethoxysilane oxide reliability for deep submicron inter-metal dielectric applications by deposition of a silane-based oxide underlayer 621
C.F. Lin, W.T. Tseng, Y.F. Chang, M.S. Feng (Hinshu, Taiwan)

Correlation of morphology and electrical properties of nanoscale $TiSi_2$ epitaxial islands on Si (001) 627
W. Yang, F.J. Jedema, H. Ade, R.J. Nemanich (Raleigh, NC, USA)

The characterization of etched GaAs surface with HCl or H_3PO_4 solutions 634
M.-G. Kang, S.-H. Sa, H.-H. Park (Seoul, South Korea), K.-S. Suh (Taejon, South Korea), K.-H. Oh (Kyungki-do, South Korea)

Author Index of Volumes 308–309 643

Subject Index of Volumes 308–309 . . . . . .

The table of contents of *Thin Solid Films* is included in ESTOC – Elesvier Science Tables of Contents service – which can be accessed on the World Wide Web at the following URL addresses:
http://www.elsevier.nl/locate/estoc or http://www.elsevier.com/locate/estoc

The publisher encourages the submission of articles in electronic form thus saving time and avoiding refeying errors. A leaflet describing our requirements is available from the publisher upon request.